Op-Ed

Cloning human embryos

Decisions must not be made by private corporations behind closed doors

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Embryonic stem cell research has proved enormously controversial in the United States and in other nations such as Germany, France, and Japan. For the most part, the controversy over stem cell research has hinged on the morality of destroying human embryos to obtain stem cells to culture cell lines for research purposes. Some think that an embryo is a human being from the moment of conception, with full moral standing and rights. Others argue that whereas human embryos may have some moral standing, their moral status does not preclude their destruction for a moral purpose such as clinical research aimed at the treatment of severely disabling or fatal diseases.

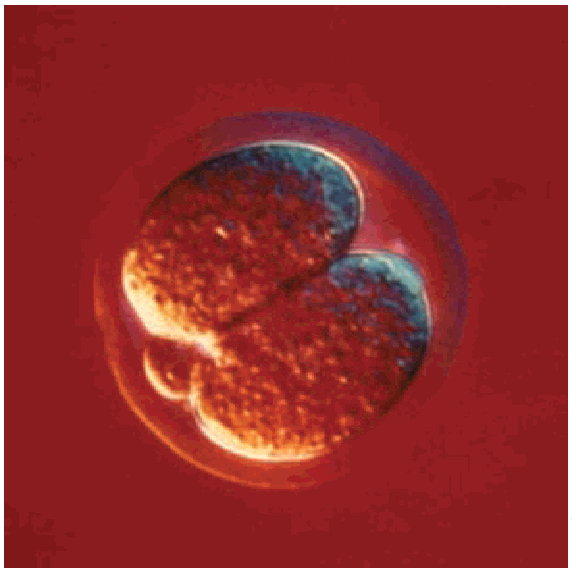
The ethical debate grew so heated in the United States that it became the subject of President Bush's first major speech to the nation on August 9, 2001. He indicated that he opposed the destruction of human embryos but that he could support the spending of federal funds for research using stem cell lines already in existence before the date of his speech. He claimed that there were 64 such cell lines available, although subsequently several government officials have been forced to admit that this number may be significantly overestimated.[1]

As this controversy has evolved, another has been moving almost in tandem with it—the controversy over human cloning. Ever since the creation of Dolly the sheep was announced in February 1997, various parties have proclaimed their willingness to attempt human cloning. This has led to a storm of protest from many quarters and resulted in bans on human reproductive cloning in more than two dozen nations and several states in the United States. No federal funding is permitted for human cloning in the United States, and the House of Representatives enacted a bill in 2001 that prohibits all human cloning.[2]

These two highly contentious subjects crossed paths when Advanced Cell Technology (ACT), a small biotech company in Worcester, Massachusetts, claimed on November 27, 2001 to have created the first cloned human embryo. On the final day of the Thanksgiving weekend, the company blitzed newspapers and television networks worldwide with faxes and phone calls to stake their claim in cloning history. The company used *Scientific American, US News and World Report*, and a new Internet journal as its publication venues.[3] Company president Michael West explained to a startled world on NBC's *Meet the Press* how scientists at his company had cloned humans "to the embryonic stage." They would thus be able to create stem cells, for therapeutic purposes, from the DNA of patients requiring therapy. This would solve the problem of immunologic rejection that occurs if stem cells from genetically different sources are used.

The publicity campaign was met with a tide of condemnation. Within hours of the *Meet the Press* broadcast, the President of the United States, the Pope, several congressional leaders, various prominent religious figures, many newspaper editorials, and a large number of politicians from all over the world condemned ACT's work as blatantly immoral. Within days, scientists in the United States and other nations were raising serious questions about what ACT had actually accomplished in its laboratories with respect to human cloning. Within a month, many involved with bioethics and science policy were raising questions about why ACT had chosen to announce its "breakthrough" in the manner that it had. The company quickly withdrew its initial claims, stating 3 days after the initial public relations blitz that they had not made embryos but a "ball of cells."

The announcement of the creation of the first cloned human embryo was a major setback for rational discussion of the ethics of stem cell research and cloning. ACT did not offer solid proof that it had either created a viable human clone or cloned a human embryo. It did excise DNA from adult cells donated by a paralyzed physician employed at the company and transfer that DNA to human eggs from which the nuclei had been removed. The eggs had been sold to ACT by a young woman for $4,000. The newly constructed egg was activated so that it began to develop like an ordinary embryo, using a proce-



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When do balls of cells become embryos?

dure similar to that devised by Ian Wilmut and colleagues to clone Dolly. But the mixture stopped developing at the eight-cell stage, within just a matter of hours after it was activated. Scientists around the world, including Wilmut himself, argued that an announcement of three cell divisions hardly merited publication, much less a press release. The announcement of the first cloned human embryo wound up generating not only shock and surprise among nonscientists but scorn and contempt among many mainstream scientists and a powerful backlash against the use of cloning for the purposes of stem cell research.[4]

It is impossible to know why ACT acted as it did. Perhaps the company's leaders sought the fame that the announcement of the first cloned human embryo would bring. Perhaps they were eager to obtain financial support for a relatively new start-up company. Perhaps they simply did not think through the consequences of their announcement. In any event, what their actions reveal is just how unacceptable it is to leave momentous decisions such as these in private hands behind closed doors.

The decision to create the first human cloned embryo should not have been announced in the manner that it was. The sudden and unexpected announcement produced a policy panic.[5] The ethical backlash against this experiment shows that more responsible conduct on the part of those working in embryonic stem cell research is required. Not only was the announcement politically dangerous, but also it was unfair to those who are ill or disabled. It is cruel to suggest to patients and their families, who are desperate for treatments for severely disabling and lethal diseases, that cures will soon be forthcoming from stem cell research involving human embryos or cloned human embryos. The recent history of gene therapy shows just how difficult the road is in traveling from basic biologic research to clinical success.

The President and Congress need to rethink what has gone on so far in embryonic stem cell research. To date, public policy has hinged on the assumption that it is wrong to create and destroy human embryos; that cloning human embryos is immoral whatever the goal; and that if this work is to proceed, it is best left to the private sector. None of these assumptions has been adequately debated, much less have any of them secured broad consensus among scientists or the general public. It is time to rethink the promise of embryonic stem cell research, the role that the public and private sectors should play in such research, who should own this emerging technology, and what the consequences are of prohibiting the destruction of all human embryos. It is even time to try and resolve the questions of what exactly is a cloned human embryo—a potential person, simply a ball of cells, or something else? Until and unless this is done, those who wait for cures and those who wish to pursue them will be ill served by science, business, and politics.

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